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Contents

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ARTICLE

The impact of Austrian pharmaceutical societies on Austrian pharmacy, 1802 to 1927

Christa Kletter

Abstract

During the nineteenth century the formation of pharmaceutical societies greatly influenced the development of pharmacy in Austria. Such societies were needed to address the economic, social and educational difficulties faced by pharmacists. They resulted from the low pay of assistant pharmacists, the lack of an old age pension scheme, the absence of health insurance, the non-availability of financial support for widows and orphans, and the low profile of pharmacists caused by the inadequate education of apothecaries, assistant pharmacists and apprentices. This article describes the origins of the more prominent pharmaceutical societies in the German language and their effect on Austrian pharmacy.

Zusammenfassung

Während des 19. Jahrhunderts nahmen pharmazeutische Gesellschaften großen Einfluss auf die Entwicklung der österreichischen Pharmazie. Zu jener Zeit waren die Pharmazeuten mit ökonomischen und sozialen Problemen und einer unzureichenden fachlichen Ausbildung konfrontiert. Die niedrige Bezahlung der Assistenten sowie das Fehlen einer Altersversorgung und einer Krankenversicherung für das pharmazeutische Personal und deren Familien und der mangelhafte pharmazeutische Unterricht führten zur Entstehung pharmazeutischer Gesellschaften, die eine Lösung der Probleme zum Ziel hatten. Der Artikel informiert über die Entstehung der wichtigsten deutschsprachigen pharmazeutischen Gesellschaften und ihren Einfluss auf die österreichische Pharmazie.

Introduction

The history of pharmacy in Austria is closely allied to the country's social, political and economic history, which is therefore now briefly described. The House of Hapsburg dominated the history of Austria over centuries, from the end of the thirteenth century until 1918. The Hapsburg dynasty established a powerful empire in Europe which included a wide range of territories situated in southern, central and eastern Europe. The size of the empire changed constantly depending on the territories conquered by wars or gained by marriages or lost again after armed conflicts. The representatives of the dynasty held the titles of kings, archdukes, dukes, counts, and so on of the different territories which comprised the empire. Without interruption they were the elected emperors of the Holy Roman Empire since the fifteenth century, except for the brief period between 1742 and 1745.

At the turn of the nineteenth century the armed conflicts between the Hapsburg Empire and France resulted in the defeat of the Hapsburg Empire and the loss of territories. Napoleon even demanded that the Hapsburg Emperor, Franz II (1768-1835) resign as emperor of the Holy Roman Empire. In the wake of the coronation of Napoleon as Emperor of France in 1804, Franz II proclaimed the Austrian Empire soon after. He adopted the title Franz I, Emperor of Austria. In 1806 he abandoned the position of emperor of the Holy Roman Empire, declaring concurrently the empire's disbandment. He took this measure after sixteen members of the Imperial Federation left to join together as a Rhine alliance under French protectorate.

The downfall of Napoleon led to a change in the balance of power in Europe. The Austrian Foreign Minister Clemens Wenzel von Metternich (1773-1859) organized an all-European congress in Vienna (the so called Viennese Congress of 1814/1815) where a new political order in Europe was to be set up. One result of the congress was the formation of the German Federation, which solved the problem of the German territories without creating one powerful German state. It was a federation of sovereign states deciding by majority vote. The Austrian Empire played a leading role in the federation and presided the meetings of the members. The conflicts between the main powers of the federation, the Kingdom of Prussia and the Austrian Empire, led to the end of the German Federation in 1866.

Throughout the nineteenth century the Austrian Empire had to deal with armed conflicts and a growing nationalism within the borders of the Empire. In 1867 the Hungarians achieved autonomy in a dual monarchy, henceforth known as the Austro-Hungarian Monarchy. However the problems continued due to the unsettled claims of the Slavic countries. Finally, the Austro-Hungarian Monarchy collapsed in 1918 after having lost the First World War.

In October 1918 the first government of German Austria (Deutschösterreich) was formed. In October 1919, in Saint-Germain-en-Laye, France, the allies from the First World War and Austria signed a treaty, which amongst other things prohibited Austria from uniting with Germany, and ordered the assignment of territorial claims to the neighbouring countries. The borders of the new republic embraced more or less the territory

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of present-day Austria. In November 1919 the official name became "Republic of Austria".

The First Austrian Republic struggled against severe economic and political problems, and ended in 1938 when she was annexed to the German Reich. Following the end of the Second World War she again became a republic in 1945. For ten years the Republic of Austria had been put under the control of the military administration of the four victorious nations – Great Britain, France, Russia and the United States. In 1955 Austria again gained full independence after successful negotiations with the Allies. She joined the European Union in 1995. Today Austria shares borders with eight other countries; Switzerland and Liechtenstein to the west, Germany and the Czech Republic, to the north, Slovakia and Hungary to the east, Slovenia and Italy to the south.

Societies in Austria before 1848

Pharmaceutical societies as such did not exist in Austria until the mid-nineteenth century. The absolute sovereigns of the Empire did not tolerate societies, because they feared such bodies could produce subversive ideas, which might destabilize the country and undermine the power of the authorities. To emphasize imperial authority a directive of 1764 banned the founding of any society which did not have the approval of the sovereign.

However, in the wake of the French revolution in 1789 it was no longer possible to suppress the spirit of enlightenment. Societies for readers of journals and papers on particular topics had to be tolerated, and societies with humanitarian aims, stock corporations and societies with economic goals were also admitted.[1, 2] The subsequent formation of all other societies in Austria resulted from the ending of the rigid censorship that was imposed until 1848.

The first half of the nineteenth century – during the time of the Austrian Empire – was characterised by political and social tensions in Austria. These tensions emerged from the bad economic situation which followed two economic crises and crop failures; these had produced inflation, famine and agitation, especially amongst the workers and farmers. The middle classes and the intelligentsia wanted to have more influence on economic questions, and yearned for personal freedom and democracy.

On 13 March 1848 citizens and students assaulted the legislative body in Vienna, seized the building and forced the government to resign. The riots by citizens and workers which followed created further public agitation and eventually led to revolution.

To stop the rebellion the Emperor, Ferdinand I (1793-1875) gave in. Ferdinand had been Emperor of Austria since 1835 and remained so until his abdication in December 1848. On 15 March 1848 he retracted the hated censorship, guaranteed the freedom of the press, and promised a constitution and the formation of a national guard.[3] Unfortunately, the political events that followed caused another revolution in October 1848, which was ruthlessly put down.[4] Afterwards, gatherings by groups of people and the founding of societies were forbidden.

Figure 1. *Rebellion in Vienna on 13 March 1848. (Source: Austrian National Library, Vienna, Austria)*

Six months later, on 4 March 1849 the new Emperor, Franz Joseph I (1830-1916) – who reigned until his death in 1916 – enforced a new set of regulations. These regulations guaranteed the freedom of the press and teaching, and the right to found any society without subversive or unlawful intentions.[5] Two weeks later another imperial directive guaranteed the unfettered formation of non-political, non-profit societies, provided they solely pursued scientific or humanitarian goals.[6] But in 1852 a new law again limited the activities of societies.[7] However in 1867, according to a new law relating to societies, non-profit societies could be formed freely, although they needed to submit detailed statutes to the Ministry of the Interior for approval.[8]

Problems facing Austrian pharmacists in the nineteenth century

The problems prevalent in Austria in the first half of the nineteenth century also affected apothecaries and their assistant pharmacists. Austrian pharmacies and the

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Figure 2. *Revolution in Vienna on 31 October 1848. (Source: Austrian National Library, Vienna, Austria)*

staff who worked in them faced a bad economic situation. This resulted mainly from the wars that Austria waged. The people had little money to buy medicines, the physicians prescribed cheap ingredients due to the shortage of foreign drugs, and the pharmacies had to compete with many herbalists and quacks, who sold medicines of questionable quality to the public.

Another problem was the poor pharmaceutical education at the time. The professional knowledge of the apprentices and journeymen relied mainly on that of their masters, because university courses were only compulsory for those journeymen who intended to run a pharmacy. Furthermore, the teaching of pharmacists reflected the necessities of medicine more than those of pharmacy. Finally, in 1853 a full course of study of pharmacy was established at the university in Vienna and also at the universities in Prague, Pesth, Cracow, Graz, Innsbruck and Lemberg.[9] Only in 1922 did the study of pharmacy become mandatory for all pharmacists working in a pharmacy.[10]

From the beginning of the nineteenth century until the reform of pharmacy education in 1922, pharmacy staff in Austria comprised personnel of very different educational levels. There were assistant pharmacists who had worked as apprentices and later attended courses at the university or enrolled in the study of pharmacy at the university. But other assistant pharmacists had only undertaken an apprenticeship, and had afterwards enlarged their pharmaceutical knowledge by working in a pharmacy.

Another issue was the subordination of the apothecaries to the physicians, because pharmaceutical affairs were simply of no importance to the influential medical faculty of the University of Vienna. Pharmacists were not present in administrative bodies, and had very little influence on the public health authorities. Furthermore, pharmacy employees suffered poor working conditions with low wages, had no health insurance and no pension scheme.

Consequently the pharmacists tried to improve their situation. They gathered in societies to join forces and to take measures to enhance their chances of achieving reform.

Early Pharmaceutical Societies before 1848

There is some limited evidence that the beginnings of pharmaceutical societies in Austria pre-date 1848. There have been claims of a report regarding a "medi-

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cal-surgical-pharmaceutical reader circle" established about 1790 in the city of Linz in Upper Austria; however, the existence of this report has been questioned.[11] The first traceable Austrian pharmaceutical reader circle appeared in 1802 in Vienna. It was founded by Joseph Moser, who was an apothecary in Vienna and an executive of the Viennese Apothecary Board between 1816 and 1836.[12] The hard economic times meant that interested apothecaries and their pharmaceutical staff could barely afford to buy the expensive pharmaceutical journals and manuals available to keep up to date with scientific progress. Hence, sharing the literature for a small fee allowed them easily to get all the information they needed about the latest findings in pharmacy and medicine.

Other pharmaceutical and chemical reader circles followed some years later. Adolf Martin Pleischl – who was professor in general and pharmaceutical chemistry at the University of Prague –established a reader circle whose formation was announced in 1823.[13] Another reader circle was established in 1830 in the city of Linz in Upper Austria.[14]

Figure 3. *Martin Ehrmann 1795 (Brno) – 1870 (Vienna) (Source: Austrian National Library, Vienna, Austria)*

Martin Ehrmann (1795-1870) and his impact on Austrian pharmacy

Martin Ehrmann was one of the most active proponents for reform in all fields of Austrian pharmacy. He was educated as a pharmacist in Friedek in Silesia (today this is Frýdek-Mistek in the Czech Republic), and worked later as an assistant pharmacist in a pharmacy in his hometown of Brno, Southern Moravia (today Brno is the second largest city in the Czech Republic). Moravia belonged to the Hapsburg Empire since the sixteenth century.

In 1819 Ehrmann went to Vienna to attend the pharmaceutical course at the university, where he graduated in 1821. He continued his studies in natural sciences, especially in chemistry, at the polytechnic institute in Vienna. Three years later he received the degree of Doctor of Chemistry from the University of Vienna. In the same year the university appointed him as an extraordinary professor to hold lectures on medicinal ingredients and chemistry. In 1827 the faculty also permitted him to teach pharmacy. He published several books, some of which became recommended text books for pharmacy students.[15, 16]

Ehrmann was a forward-looking man who was aware of the upcoming challenges the pharmaceutical profession had to meet. Consequently, in 1827 he suggested the establishment of a pharmaceutical institute and of a laboratory at the university. However, the professor for botany and chemistry – Franz Joseph von Jacquin – and the professor for natural history – Johann Baptist Andreas Scherer – both opposed these proposals. Ehrmann's other projects (establishing a pharmaceutical journal, forming a pharmaceutical society, and establishing a welfare institution for needy pharmacists) failed likewise, due to the opposition of the Viennese Apothecary Board.

In 1834 Ehrmann started publishing his own journal entitled "The latest and most important findings in pharmacy and in basic sciences" (*Das Neueste und Wissenswertheste aus dem Umfang der Pharmacie und ihrer Grundwissenschaften*). Accordingly, he included in it information about the latest findings in chemistry and medicinal drugs and general pharmaceutical affairs. The last issue of this journal was published in 1845.[17]

In 1836 Ehrmann moved to the city of Olmütz (today Olomouc in Moravia in the Czech Republic) to accept the newly installed chair in "medical propaedeutics" (Chirurgische Vorbereitungswissenschaften-an introductory course) at the Franzens University. There he taught chemistry, botany and physics to surgeons and held the position of rector at that university in 1846.[18] Despite his new professional tasks, he retained his close connections to pharmacy.

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Martin Ehrmann and the *Austrian Journal of Pharmacy,* 1847

During the short liberal period between March and October 1848 pharmacists articulated their problems openly in the "Austrian Journal for Pharmacy" (*Österreichische Zeitschrift für Pharmacie).* This was published by Martin Ehrmann. Since 1847 the journal had disseminated new scientific findings as well as information about matters of professional importance.

Another forum to freely discuss urgent problems in Austrian pharmacy – in particular those of pharmacy owners – was the Austrian Apothecary Congress organised by the Austrian Apothecary Board and held in Vienna in September 1848. During that conference the participants discussed various problems of Austrian pharmacy, and agreed to establish a pharmaceutical society in order to have a platform to discuss all scientific and professional questions. Martin Ehrmann's abovementioned "Austrian Journal for Pharmacy" was accepted as the future society's journal.[19]

The Moravian Apothecary Society, 1855

In March 1849 Ehrmann initiated the formation of the Austrian Apothecary Society in accordance with the decision of the Austrian Apothecary Congress held in September 1848 in Vienna.[20] Later, in August 1849 he became the society's provisional director.[21] However, in February 1851 the authorities concerned prohibited the activities of the society, and in November 1852 the Ministry of the Interior dismissed a petition in respect of this matter and confirmed the prohibition of the society's ability to act.[22]

Despite his disappointment Ehrmann did not abandon his idea of establishing a pharmaceutical society. In 1855 his initiative to form a "Moravian Apothecary Society" (Mährischer Apothekerverein) in Olmütz – the town where he lectured at the university – was finally successful.[23] The new society aimed to improve the apothecaries' situation, and to provide financial support to needy pharmacy students as well as to pharmacists and their families in cases of illness, death and accidents.[24] The humanitarian goals might have helped to secure the approval of the society.

Ehrmann did not lose sight of his goal to form a society with a wider sphere of action. He was aware that reforms in pharmacy required a wider operating range. He succeeded in attracting pharmacists from various countries across the Austrian Empire and enlisted them as members of the Moravian Apothecary Society.

The General Austrian Apothecary Association, 1861

In 1858 the Moravian Apothecary Society installed a committee in Vienna to prepare the formation of an overall Austrian apothecary society.[25] The ministry finally approved the statutes three years later, in 1861, and the new society – under the title "The General Austrian Apothecary Association" (Allgemeiner Österreichischer Apotheker-Verein) – was able to start its activities with 266 members. In the same year the Moravian Apothecary Society dissolved itself and handed part of its assets to the new society. Ehrmann's journal, the "Austrian Journal for Pharmacy" became the journal of the new society.[26] In 1863 the journal changed its name to "Journal of the General Austrian Apothecary Association" (*Zeitschrift des Allgemeinen Österreichischen Apotheker-Vereines*).[27]

Pharmacists from all over the empire could enlist as members in this new society. Members included owners of pharmacies as well as assistant pharmacists, if the latter held a degree as Magister of Pharmacy or Doctor of Pharmacy. Registered in Vienna, the society became the most powerful pharmaceutical society in the Austrian Empire. The goals of the society comprised professional reforms – mainly those of the pharmacy owners – and the support of pharmaceutical sciences.

During its early years the society's activities focussed on professional problems of the apothecaries, mainly on the concession system and the tariff list, and on the inadequate education of the apprentices.[28] The society ran a library and built up a large collection of herbaria and plant drugs for teaching and scientific investigations. However, it largely neglected the interests of the assistant pharmacists during the following years.

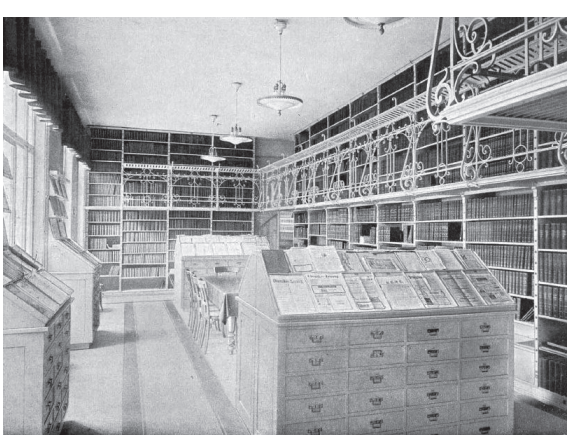

Figure 4. *Library of the Austrian Apothecary Association as portrayed in 1908.*

The library located in the building of the Austrian Chamber of Pharmacists in Vienna still exhibits the original bookshelves and the galleries of 1908.

(Source: Library, Austrian Chamber of Pharmacists, Vienna, Austria)

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Figure 5. *Collection of herbal drugs at the clubhouse of the Austrian Apothecary Association in Vienna, 1910 (Source: Library, Austrian Chamber of Pharmacists, Vienna, Austria)*

The pharmaceutical school of the General Austrian Apothecary Association in Vienna, 1865

The instructions for the training of apothecaries, assistant pharmacists and apprentices, as outlined in an Order of 1834,[29] did not oblige apprentices to attend pharmaceutical lectures at the university. This order was a setback in the apprentices' education, because earlier regulations had requested their attendance at those lectures. Therefore their knowledge depended greatly on that of the apothecary who was educating them and on self-study using recommended textbooks.

The health authorities still regarded pharmacy as a handicraft for which no scientific qualifications were required. However, the progress in natural sciences made during the course of the nineteenth century required a change in the apothecary's education. As the production of chemicals had started to drift from pharmacies to the rapidly developing chemical industry, new testing methods became necessary to guarantee the identity and quality of the purchased pharmaceuticals. Therefore pharmacists needed to know more about chemistry and to learn new methods to identify the products and to scrutinize their quality and purity.

To cover this lack in education the General Austrian Apothecary Association founded a school in Vienna in 1865 to instruct apprentices. At first courses were held during two semesters. The taught subjects included theoretical chemistry, botany and pharmacognosy and practical exercises in the laboratory. Attendance was voluntary and free of charge; only a small fee had to be paid for the practical work in the laboratory. The curriculum was gradually enlarged up until the end of the nineteenth century, and included instruction in physics, analytical chemistry, pharmaceutical chemistry, practical pharmacy, legal knowledge and bookkeeping.

By 1905 the courses lasted 18 months and were compulsory for Viennese apprentices. The school finally closed in 1922 when a new curriculum was introduced at the university.[30, 31]

Since then the pharmaceutical staff of a pharmacy have needed to hold the university degree "Magister der Pharmazie" to be allowed to work as a pharmacist there. Practical training in the pharmacy had then to be carried out after the university studies.[32]

In 1888 the General Austrian Apothecary Association established laboratories equipped to examine edible products and to perform chemical, pharmacognostic and medical analyses. In 1891 the society opened a laboratory for bacteriological analyses.[33]

Figure 6. *The building housing the laboratories of the Austrian Apothecary Association. In the background is the clubhouse of the society, late 19th century. (Source: Library, Austrian Chamber of Pharmacists, Vienna, Austria)*

The society was active until 1938 when all Austrian pharmaceutical societies were disbanded. In 1946 the society registered again, representing only the pharmacy owners.[34] It survives today, but since 1959 it has operated under the name "Austrian Apothecary Association" (Österreichischer Apotheker-Verband).[35]

The Pharmaceutical Assistants Society, 1868

During the nineteenth century the assistant pharmacists tried to improve their dismal situation by forming new societies to enforce their demands. The assistants missed out on professional representation by existing organisations since the apothecary board only represented the owners and supervising heads of pharmacies.

The first such body was the "Pharmaceutical Assistants Society" (Pharmaceutischer Assistenten Verein). Its activities started with much enthusiasm in Vienna in 1868. However, only one year later the society declined, because leading members left it to become apothecaries. Opposition to this society grew amongst

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the pharmacy owners because they feared that the existing concession system might undergo radical changes. Many assistants left the society for fear of being dismissed from their jobs. In 1875 the society stopped its activities without ever being formally dissolved.[36]

Figure 7. *Laboratory of the Austrian Apothecary Association in Vienna, 1910 (Source: Library, Austrian Chamber of Pharmacists, Vienna, Austria)*

The Austrian Pharmaceutical Society, 1873

During the nineteenth century numerous pharmacists were not content with the activities of the "General Austrian Apothecary Association" because the society focussed mainly on the school and the interests of the Viennese pharmacy owners.

In 1873 a new society was formed under the name "Austrian Pharmaceutical Society" (Österreichische Pharmazeutische Gesellschaft). This aimed to achieve the necessary reforms for the whole profession, emphasising the interests of the pharmacists in the different Austrian territories of the monarchy. All Austrian pharmacists of the Monarchy were contacted and invited to become members. The activities of the society embraced a wide range of issues including the concession system, changes in the salary system, the working out of drafts for an apothecary law, and proposals to improve pharmaceutical education at the university. Some members collaborated with the Ministry of the Interior to work on the new edition of the Austrian pharmacopoeia, and were delegated to the meetings of the public health authorities.[37]

From the very beginning the society was interested in advocating pharmaceutical sciences. The society supported reforms in the university curriculum, and in 1897 campaigned for the admission of women to university studies. By 1895 women had already been admitted to the study of pharmacy in Hungary, and finally in 1900 women could also enrol in pharmacy in all other parts of the Austro-Hungarian Monarchy. In 1901 the society called for a graduation ceremony for pharmacists similar to that marking the end of the doctor's training. A petition was submitted and was successful.[38]

The annexation of Austria by the Third Reich in 1938 stopped all activities by the Austrian Pharmaceutical Society. However, the society was restored in 1980 to pursue purely scientific goals. Since then it has supported pharmaceutical sciences in Austria and has regularly organised scientific congresses at universities in Vienna, Graz and Innsbruck.[39]

The General Austrian Assistant Pharmacists Society, 1891

Towards the end of the century the professional situation of the assistant pharmacists had become entirely unsupportable. In consequence they formed another new society to raise their demands. In 1891 the first general assembly of the "General Austrian Assistant Pharmacists Society" (Allgemeiner Österreichischer Apotheker-Assistenten-Verein) was held in Vienna.[40] The assistant pharmacists had very difficult working conditions, low wages and long working hours. The main goals of the new society were to achieve professional reforms and to improve the working conditions of the assistants. They demanded representation on the apothecary board, a change in the concession system, and the implementation of a retirement fund.

To give former members who had purchased pharmacies in the meantime the possibility of joining the society, its name was changed in 1896 to the "General Austrian Pharmacists Society" (Allgemeiner Österreichischer Pharmazeuten-Verein).[41] Subsequently, other similar assistant pharmacists' societies came into being in all parts of the Austro-Hungarian Monarchy.

The Association of Pharmaceutical Societies of Austria, 1898

To better achieve the realisation of their demands, several of the assistant pharmacists' societies of the empire united in 1898 to form a supra-regional association, the "Association of Pharmaceutical Societies of Austria" (Verband pharmazeutischer Vereine Österreichs).[42] They realized that a strong association could put more pressure on the health authorities and pharmacy owners in order to carry out reforms. The General Austrian Pharmacists Society had initiated that union, and very soon the majority of the empire's assistant pharmacists societies joined in.

In 1910 the association changed its name to "Pharmaceutical Federation of Austria" (Pharmazeutischer Reichsverband Österreichs).[43] It operated until 1938 when it was disbanded. In 1946 this federation

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revived,[44] and it has acted since then as a body representing the interests of employed pharmacists. In 2000 the name was changed to the "Association of Employed Austrian Pharmacists" (Verband Angestellter Apotheker Österreichs, or VAAÖ).[45]

The Society of Sons of Apothecaries, 1904

As discussed earlier, the apothecaries and the assistant pharmacists tried to obtain reforms for the pharmaceutical profession, but at first they were not successful. In 1870 a new pharmacy bill came into force, but this disregarded the demands of the pharmacists. As a result of this omission from the health regulations the pharmacists demanded that a new pharmacy bill be published.

At the turn of the twentieth century heated debates finally pressured the health authorities to deal with the necessary reforms in pharmacy. The pharmaceutical societies – regardless of whether they supported the assistant pharmacists or the pharmacy owner – put pressure on the authorities to regulate the pharmaceutical affairs.

In 1904 a "Society of Sons of Apothecaries" (Vereinigung der Apothekersöhne Österreichs) was constituted to demand a change in the draft of the new pharmacy bill.[46] The bill foresaw that the pharmacy business of a deceased apothecary could not be carried on if his wife died after him and his full-age son still lacked the qualifications needed to run a pharmacy. As the requirements stated in the draft represented a considerable discrimination against such individuals the society succeeded in its demands. The society was dissolved in 1907 when a new law regulating the pharmaceutical affairs was put into force.[47] The Apothecary Law of 1907 at least implemented some important reforms needed in pharmacy such as a new structure for the Apothecary Board, representing both owners and assistant pharmacists.

Pharmaceutical Welfare Societies 1838 to 1916

Another great problem for the assistant pharmacists was the lack of any kind of health insurance. During the nineteenth century various societies were formed dedicated to the welfare and financial support of the pharmacies' employees and their families. One such society was the "Supporting Institution of the Viennese Apothecary Board" (Unterstützungsverein des Wiener Apotheker-Hauptgremiums) founded in 1838.[48] Henceforth, the New Year's gratuities, which were distributed by the Viennese apothecaries among physicians and customers, would in future go into the welfare fund of the society to support needy pharmacists and their families.

Another pharmaceutical welfare society started its activities in 1881 in Vienna; this was the "Apothecary-supporting Institution Hygea" (Apotheker-Unterstützungs-Institut Hygea).[49] In 1888 a new law introduced a compulsory health insurance scheme valid for all workers except public servants.[50] As that bill also applied to pharmaceutical employees in pharmacies,[51] the welfare society "Hygea" established the new health insurance fund "Hygieia" where the pharmaceutical personnel could register.[52] The welfare society itself (in literature cited alternately as Hygea or Hygieia) remained active until 1920.[53]

In the following years more health insurance funds developed. In February 1913 a supra-regional health insurance fund for pharmacists (Krankenkasse der Apotheker Österreichs) was registered and extended its sphere of action to the Austrian territories of the Austro-Hungarian Monarchy.[54, 55]

A third remarkable society, the "Society of Green Cross" (Gesellschaft vom grünen Kreuz, Österreichisches Pharmazeutenheim) was founded in 1908 to mark the Diamond Jubilee of Emperor Franz Josef I.[56] This charity organisation aimed to establish and rent buildings to run sanatoria, homes for convalescence and recreation for pharmacists and their family members. The society organised well-attended charity events to collect generous donations for its activities. Unfortunately the work of the society came to an abrupt end with the start of the First World War, and in 1916 the books, archive and remaining minor assets were transferred on an interim basis to the "General Salary Fund of Austrian Pharmacists" (Allgemeine Gehaltskasse der Apotheker Oesterreichs).[57] However, the society was not revived after the war.

Pharmacy Pension Schemes 1894 to 1927

One important issue for older assistant pharmacists was the lack of a pension or retirement pay. Very late on, in 1894, a pension fund for pharmacists (Pharmazeutisches Pensionsinstitut für Österreich) was formed,[58] but it was dissolved fourteen years later, in 1908.[59] In 1906 the government had passed a bill which implemented a compulsory retirement pension insurance for all employees, which became effective on 1 January 1909.[60] Consequently, pension funds had to be established. In 1909 the Ministry of the Interior approved the formation of an ersatz institute for the "General Pension Fund for Austrian Pharmacists" (Allgemeines Pensionsinstitut der österreichischen Pharmazeuten).[61]

However, it took some time – until 1914 – for the "General Pension Fund for Austrian Pharmacists" to be fully constituted. It finally started work on 1 May 1914.[62] In 1926 the Austrian parliament enacted a new bill regarding obligatory insurance for employees in cases of accidents, sickness, retirement and unemploy-

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ment.[63] In accordance with this law the "Insurance Institution for Pharmacists" (Versicherungsanstalt für Pharmazeuten) came into being in 1927, also incorporating the "General Pension Fund for Austrian Pharmacists". This new institution operated with the "General Salary Fund of Austrian Pharmacists" as part of an administrative collective.[64]

The General Salary Fund of Austrian Pharmacists, 1908

The low wages of the assistant pharmacists was another topic for continuous discussion between the employees and pharmacy owners. In 1902 the pharmacy owners agreed to a new salary arrangement for the Viennese assistant pharmacists. Each apothecary paid his assistant pharmacist a basic salary irrespective of his length of service. At the same time the pharmacy owners had to make a defined contribution for each assistant to a fund controlled by the Apothecary Board. Out of this fund the board disbursed a bounty payment to each pharmaceutical employee according to the length of his service. Hence, older assistant pharmacists no longer had to fear being dismissed due to their higher wages.

This new system proved to be effective, and in 1908 a new society named the "General Salary Fund of Austrian Pharmacists" (Allgemeine Gehaltskasse der Apotheker Österreichs) held its inaugural assembly in Vienna. Some 300 pharmacy owners and 700 assistant pharmacists from all over the Austro-Hungarian Monarchy had already joined the society.[65] The membership was voluntary until 1919 when the Austrian National Assembly passed a bill which implemented legally the salary fund applicable to all Austrian pharmacists.[66] This excellent salary system has survived until today.

To date pharmacists employed in public pharmacies or hospital pharmacies are paid according to a salary system, which comprises eighteen levels and provides a promotion to the next higher salary level every two years. The employer pays a standardised amount to the Salary Fund irrespective of the employee's salary level. Today the "Pharmaceutical Salary Fund of Austria" (Pharmazeutische Gehaltskasse für Österreich) exists as a public corporation registered in Vienna, which acts in co-operation with the Austrian Chamber of Pharmacists.[67]

Conclusion

Since the lifting of the ban on the formation of societies in 1849 numerous pharmaceutical societies have arisen in Austria. By the end of the Austro-Hungarian Monarchy era, which ceased in 1918, around forty pharmaceutical societies in the German language existed. As indicated in this review, four of them are still relevant for Austrian pharmacy today: the "Pharmaceutical Salary Fund of Austria", the "Austrian Apothecary Association", the "Association of Employed Austrian Pharmacists" and the "Austrian Pharmaceutical Society".

Apart from the German speaking pharmaceutical societies, numerous national pharmaceutical societies existed in the different territories of the Monarchy using their own mother tongue for communication. Such societies are known from Bohemia, Moravia, Galicia, Bukovina, Hungary, Croatia, Istria, Trentino and the city of Trieste.[68]

Many pharmaceutical societies did not focus solely on professional and educational reforms but also engaged in sporting activities, entertainment or students affairs. According to the research carried out in Austria to date the number of pharmaceutical societies reached around one hundred in the whole of the Austro-Hungarian Monarchy. There may have been even more which have still to be discovered.

Author's address: Assistant Professor Dr Christa Kletter, Department of Pharmacognosy, University of Vienna, Centre of Pharmacy, Althanstrasse 14, A-1090 Vienna, Austria.
E-mail: christa.kletter@univie.ac.at

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ARTICLE

A gift of scented oils to Oliver Cromwell from the Grand Duke of Tuscany in 1657?

Andrew Hardy

Abstract

Further studies have been done on two samples from the middle drawer of an Italian seventeenth century chest or cabinet. Some newly acquired historical and observational information has been combined with a re-interpretation of previously collected chemical analytical data. The results strongly indicate that the original samples were scented oils, and that the carrier oil used was very probably moringa oil. The absorbed scents were likely to have been jasmine or orange extracts. There is evidence to suggest that the chest was sent as one of several gifts from the Grand Duke of Tuscany to Oliver Cromwell in 1657.

A brief history of scented oils

A scented oil is here defined as a carrier (sometimes base or plain) oil, of little or no odour, to which has been added some sweet-smelling extract from a plant or animal. This extract consists of molecules with distinctive odours and which are usually volatile, and where the final scented oil is when they have been absorbed into a stable carrier oil by maceration or enfleurage.[1]

We are surrounded by scents and have been for millenia. In the past our lives could depend on being able to recognize specific animal scents (bear or deer?), and being able to distinguish between good ones (freshly cooked food for example) and bad ones (for example, rotten food). Finding a naturally scented material, such as a tree exudate, and then using it to scent clothes and bedding must have occurred. The knowledge of the makings and uses of scented materials is generally considered to have originated in the Near East of Mesopotamia in the late fourth millennium BCE. This knowledge was used, adapted and improved upon by the various civilisations of Mesopotamia. These were, in approximately chronological if overlapping order: Sumerian, Akkadian, Babylonian and Assyrian. Babylon finally fell to the Achaemenid (Persian) Empire in the sixth century BCE, which in turn fell to Alexander the Great in c.330 BCE. Using the trade routes of these civilisations the knowledge spread west to the Levant (Palestine and Lebanon) and on into the Mediterranean.[2]

It intermingled there with local knowledge and again was improved upon by the peoples it encountered. These were, from the late fourth millennium BCE to the late fifth century AD: Ancient Egypt (based along the Nile), Minoan (centred on Crete), Mycenaean (centred on mainland Greece), Classical and Hellenistic Greece and on to the Roman Republic and Empire. After Rome fell and Europe entered its Dark Ages and Medieval Period (c. 500 AD to c. 1500 AD overall) at least some of this accumulated knowledge on scented materials was retained in the libraries of the European monasteries and by the Byzantium Empire (based at Constantinople, and which fell to the Ottoman Turks in c.1450 AD). Also, and most importantly, it was expanded and improved upon *and* written down by the Arab scholars of the emerging Islamic Empire.[3, 4, 5, 6]

By the sixteenth and seventeenth centuries this new knowledge was largely available in written form and the 'still-room' had moved out from the monasteries to most of the Palaces and grand houses of Europe. There herbs were dried, spices stored and a simple form of distillation done. This latter occupation was labour intensive, difficult and sometimes gave low yields. Thus essential oils could sometimes be made by distillation, but the main methods used to make scented oils/fats/waxes were still enfleurage and maceration.[7, 8, 9]

However, by the nineteenth century in Europe much more efficient (steam) distillation was increasingly replacing these older absorption techniques. The essential oils so made could then be directly added to the carrier material. Distillation in turn was increasingly replaced by solvent extraction in the twentieth century, so that now the older techniques of enfleurage and maceration are no longer used commercially. Also, synthetic organic chemistry had improved sufficiently to be able to make some *synthetic* aroma molecules by the early twentieth century. Around 1900 almost all fragrance ingredients were natural; by 2000 about 90% were synthetic. As Ernest Beaux (1881-1961), creator of Chanel No. 5, famously stated: "The future of perfumery is now in the hands of the chemists".[10, 11]

Carrier oils and uses of scented oils

The first carrier oil used, as mentioned in the texts of the earliest civilisations of Mesopotamia, is thought to have been sesame oil.[12] The oils most used in the later Mesopotamian, Egyptian, Minoan and Mycenaean civilisations were: balanos, moringa, sesame, almond, castor and later (from c.1350 BCE grown in Egypt, and probably imported earlier from the Levant) olive oil.[13, 14, 15] Olive oil was often used in the later Greco-Roman period, and in the *De Materia Medica* of Dioscorides (c.40-90 AD) the oils to be used as bases in scented oils were given as: olive, sesame, moringa and (sweet) almond oils.[16, 17] Olive oil was, and still is, usually readily available at reasonable cost and so was/is often used. Now, in addition to some of the above oils there are other oils available to be used as carriers. These include

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apricot, avocado, coconut, grape, jojoba, peach and sunflower oils.[18]

An enormous array of aroma molecules has been extracted over time from animals (for example: civet, musk, ambergris) and various plant parts (for example: myrrh, cinnamon, lavender, rose, orange, jasmine). Now, the chemical laboratories of the present-day perfume industry are making a multitude of new scent molecules every year.[19, 20]

Scented oils have had a variety of uses over the last five millennia. In general terms these are: medicinal, cosmetic, ritual and some unusual uses. In medicine they have been, and sometimes still are, used for topical application to the skin to treat bruises and burns, to aid in massage and as a general emollient. They were also taken internally in small doses as a mild laxative and as a perceived cure for stomach and kidney problems and as a plague preventative. Cosmetic uses have been: applied to gloves, shirts, bedding as well as the skin and hair to improve odour; and wearing or burning a strong scent to ward off the plague and to cover the stench of decay. Ritual uses have included anointing the living, the dead and the temple statues of the Gods or ancestors; and burning it in the temple to induce a relaxing atmosphere for prayer and meditation. Some unusual (possibly ritual) uses have been: foundation deposits of containers of oils/fats in the base layers of some of the oldest buildings excavated in Mesopotamia; and similarly scented oils were known to have been mixed with the mortar used for the foundation stones of mosques of the later Islamic Empire.[21, 22, 23, 24]

Recent studies have shown that some scents have antimicrobial, insecticidal and bactericidal properties. Chemists are looking at such scents to try to identify and isolate the biologically active molecules.[25] Specific uses relevant to my results will be mentioned in the discussion section below.

Examples of published analyses of old residues

Samples that probably originally contained scented oils and which were used for medicinal and/or cosmetic purposes by the living, and whose surviving residues have been chemically analysed by modern spectroscopic methods and the results published, are few. Brief summaries of three such examples are given below.

Example 1: Residues from the interiors of three Base Ring I juglets were analysed using the GC-MS (Gas Chromatography- Mass Spectrometry) technique. The juglets were excavated at Tel Beth-Shemesh (about 25 kilometres west of Jerusalem in Israel), and dated to the fourteenth century BCE. From their analytical data the authors inferred the presence of an oil in each juglet, which could not be identified. Additionally they found evidence that mint was infused in the oil of one residue, and for another residue they found a degradation compound which was suggestive of a medicinal (scented) oil. The oils were thought to have been used for either medicinal or ritual anointing purposes.[26]

Example 2: Two Roman-era pink make-up and/or rouge samples were studied by a variety of analytical techniques. Both samples were found in the excavated Roman colony of Celsa (Zaragoza, Spain). Madder lake was the pigment used to give the pink colour in both samples, but made by precipitation on two different aluminium compounds and each then absorbed by two different base materials – inorganic for one sample and organic for the second sample. The second sample, from the surface of a cosmetic stirring tool that was dated to about the fifth century AD, was analysed using various Mass Spectrometry (MS) related techniques. A vegetable oil (possibly olive oil), mixed with a small amount of animal fat, was indicated. The authors state that this oil had been scented before being used for this make-up and/or rouge, but the scent's identity could not be conclusively determined.[27]

Example 3: In a very recent publication some Red Lustrous Wheelmade ware sherds (where approximately 60% of the sherds were found to contain usable absorbed organic residues), and three visible residues, were analysed by the GC-MS technique. They were obtained from various sites in Turkey, Cyprus, Egypt and Syria and dated to the eastern Mediterranean Late Bronze Age (c.1600-1000 BCE). Twenty-two sherds and the three visible residues contained only one commodity, (probably) plant oil. It could not be identified, but one of these sherds and all of the visible residues were also found to contain small amounts of castor oil. Another twelve sherds were found to contain two commodities, namely plant oil mixed with beeswax (seven sherds) or bitumen (five sherds). The absorbed residues of the remaining sherds each contained one commodity – beeswax (in sixteen sherds), bitumen (in six sherds) or pine resin (in three sherds).

It was thought that at least some of the original vessels made of this ware at this time contained scented oil, but no chemical evidence was found to identify any scent material so used. A variety of uses were suggested for both the containers and their contents. The container jars were used for transport and storage of liquids, which were then probably used for libation pouring in a domestic, ritual or tomb environment. The identified residues could have been used medicinally (the castor oil) or as cosmetics (the scented oils).[28]

As can be seen from the above examples there is sometimes a degree of uncertainty regarding the detection of even the presence of a plant oil in an old or de-

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graded residue. Identification of the plant oil is rare, but is possible for oils that have distinctive 'molecular biomarkers' that can survive the centuries (as for castor oil above). An example where several old samples, from the same excavated site, have been analysed and evidence found for the presence of scent, but having beeswax as the scent carrier, is given below.

Residues from seven Roman glass unguentaria were analysed using various combinations of gas chromatographic and mass spectrometric techniques. The unguentaria were found during an excavation of a Roman villa in the ancient town of Oplontis (today this is Torre Annunziata, about 20 kilometres south east of Naples, Italy). The unguentaria were dated to between the first century BC and the first century AD. Beeswax, pine resin and another waxy-lipid material of plant origin were identified in all of the residues. The presence of the waxy-lipid plant material was said to show that the original material had been scented using maceration or enfleurage, possibly using plant flowers and/or leaves. The authors suggested that these contents indicated that they were originally made as (scented) cosmetics (for example: moisturising face creams) or as (emollient) skin balms.[29]

Figure 1. *Oliver Cromwell, Lord Protector of England, 1599-1658. (Source: © Cromwell Museum, Huntingdon, UK)*

The samples studied and their provenance

There is evidence that in 1657 the Grand Duke of Tuscany, Ferdinando II de' Medici (1610-1670 and who ruled 1621-1670), sent various gifts to Oliver Cromwell (1599-1658; Figure 1), Lord Protector of England (1653-1658).[30] One of these gifts is reputed to be the stone inlaid Florentine cabinet and its contents (Figure 2) currently on display in the Oliver Cromwell museum in Huntingdon in Cambridgeshire, UK. The cabinet's dimensions are 41cm wide by 36cm deep and 29.5cm high. The cabinet has been independently inspected by furniture historians and assessed to be a Florentine pietra dura (literally: hard stone) cabinet made in the period 1653-1658.[31] The contents of the cabinet's small tubs/pots, where some of the empty pots can be seen in the foreground of Figure 2, are believed to have been made up by the "L'officina Farmaceutica di Santa Maria Novella" in Florence prior to the cabinet being sent to England.[32]

Figure 2. *The Florentine cabinet and some containers. (Source: © Cromwell Museum, Huntingdon, UK)*

The contents of the cabinet's tubs or pots were all removed and placed in modern air-tight glass containers approximately forty years ago. Samples from the top drawer of the cabinet were found to be soft soaps, as reported in a previous article.[33] Small amounts of solid were also removed from two containers whose contents had originally come from the cabinet's middle drawer (hereafter MD). Figure 3 shows a side-view of four of the original glass containers.

These two samples (labelled MD 16/55 here, where MD 5 in Figure 3 corresponds to my MD 55) were previously chemically analysed and these initial results in-

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terpreted to indicate that both samples contained, in varying amounts, a soap (sodium palmitate), beeswax and/or possibly some plant wax, and ruminant adipose fat and/or cocoa butter.[34] The samples were originally thought to be skin balms, but are now thought more likely to have been scented oils.

I present here some new historical and observational information combined with a re-interpretation of the previously collected chemical analytical data on these two solid samples. Also briefly mentioned later is some relevant qualitative results from more recently collected Gas Chromatography – Mass Spectroscopy (GC-MS)[35] data, but which is not yet fully interpreted. A paper containing this new data will be published later. In this paper it is hoped to also include additional analytical data, including that obtained by Fourier Transform Infrared spectroscopy (FTIR) and Gas Chromatography-Combustion-Isotope Ratio Mass Spectroscopy (GC-C-IRMS).[36]

Chemical analytical methods and results

The technique of Fatty Acid Methyl Ester derivatisation on methanol extracted material (FAME GC-MS) was previously done on both the MD samples.[37] These results are summarized below, with some additional information given in an Endnote.[38]

A) MD16 sample. Nine of the eighteen compounds identified were saturated straight-chain carboxylic acids (C8/9/10/16/18/20/21/22/24, to a total presence of almost 79%). The five acids having the highest percentages were: C16:0 (24.3%), C22:0 (18.6%), C18:0 (16.5%), C20:0 (12.0%) and C24:0 (3.3%). Additionally there were: four dicarboxylic acids (2C7:0 to 2C10:0, where the '2' signifies the presence of two carboxylic groups per molecule, and present to a total of 10.4% and where 2C9:0 (Azelaic acid) had the largest amount present – at 4.7%); two C18:2 isomers (to a total of 3.7%); one oxo- and one dihydroxy- derivative of C18:0 (at 0.5% and 3.8% respectively); a small amount of C18:1 (oleic acid, at 3.4%) and a just detectable small amount of C17:0 (estimated to be about 0.2%).

B) MD55 sample. Twelve of the twenty-five compounds identified were saturated straight-chain carboxylic acids (C7/8/9/10/16/17/18/20/21/22/23/24, to a total of almost 74%). The four acids with greater than 10% percentages were: C16:0 (20.3%), C18:0 (18.7%), C22:0 (16.3%) and C20:0 (12.0%). Also present were: six dicarboxylic acids (2C6:0 to 2C11:0, to a total of 13.8% and where 2C9:0 had the largest amount present, at 5.8%); two C18:2 isomers (to a total of 6.3%); one oxo- and one dihydroxy- derivative of C18:0 (at 0.7% and 1.8% respectively) and one oxo- derivative of C9:0 (at 0.3%); some C18:1 (at 3.0%) and a very small amount of phthalic acid (at 0.2%), where this last compound is the acid derivative of the plasticiser diethyl phthalate (assumed to be from its most recent container). The amounts of C17:0 and C24:0 found were 0.4% and 2.0% respectively.

A re-interpretation of the above FAME GC-MS results will be presented in the discussion section below.

Figure 3. *Side-view of four middle drawer containers. (Source: © Cromwell Museum, Huntingdon, UK)*

New historical and observational data and its interpretation

Before I consider the re-interpretation of the analytical chemistry data given above I will first present other information that can aid me in identifying the original contents of the second, middle drawer of this chest.

First I will consider the chest itself. It has been variously described, one such description being "cassette per profumi" (box of perfumes/scents).[39] Its top and bottom drawers contained soft soaps and ointments respectively. At least some, and possibly all, of these were scented (jasmine and orange extracts having been identified).[40] Thus scented oils could be possible candidates for the original contents of the middle drawer. This suggestion is supported by the shape of the glass containers in this middle drawer. They have a narrow base which widens out and then reduces to a narrow short neck and a small (corked) top (see Figure 3). The containers from the other two drawers do not have narrow necks but do have much wider open tops (see the foreground of Figure 2). They contained soft solids, whereas a narrow neck implies a liquid content, such as a scented oil.

Secondly I will consider the physical state now of the remaining contents of the second drawer samples. These samples are currently stored in small boro-silicate glass bottles. They are now each a mixture of a significant amount of light yellow soft solid and a darker oil. Non-drying oils, such as almond and olive oils, are known to thicken and partially precipitate as they age.[41]

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A non-drying oil was usually used in the past as the carrier oil for the production of scented oils.

So, which carrier oils were being used in seventeenth century Europe? The *De Materia Medica* of Dioscorides [42, 43] was probably still being used, albeit enlarged and modified. A study of various recipe books of the seventeenth and early eighteenth centuries reveals the use of three of the four carrier oils given by Dioscorides. These are moringa (sometimes known as ben or behen) oil, olive oil and (often sweet) almond oil (the fourth being – from Dioscorides – sesame oil).[44, 45, 46]

Some of these listed recipes and uses will be mentioned later, where they are relevant to my results. Also melting points of these fresh oils should be mentioned. Olive, almond and sesame oils all have melting points below 0° C, whereas moringa oil has a melting point of about 19° C. Thus moringa oil, after several centuries of ageing, would perhaps be the most likely to significantly precipitate at museum room temperature, as found for my samples?

Discussion of the chemical data

I will now discuss the re-interpretation, especially in the light of the above information and its interpretations, of the FAME GC-MS data listed in the results section. Fatty acid ratios are commonly used to indicate if a fat or oil is present in an old residue.[47, 48] The most commonly used is the Palmitic acid (P, C16:0) to Stearic acid (S, C18:0) ratio. My P/S ratio values are 1.5 and 1.1 for the samples MD 16 and MD 55 respectively. These values are in the range that usually indicates the presence of an animal fat.[49]

But given the previous information and associated interpretations are there any known carrier oils of the past with a P/S ratio in the range 1.0 to 1.5? Of the three carrier oils mentioned above only one is in this range – *Moringa oleifera* oil (the most common species from which this oil was obtained). The P/S ratio range found in the recent literature for this species is 1.0 to 1.6. Other species of this oil also fall in this range (for example, *Moringa peregrina* oil, which was and still is grown in Egypt), and a few that do not (for example, *Moringa concanensis* oil, which has a reported P/S value of 3.1).[50, 51] Olive and almond oils have (the expected) significantly higher P/S values.[52]

All the above three carrier oils are non-drying oils; but can we show that our samples are non-drying oils? Such an oil is one which does not harden over time when exposed to air and light. Semi-drying oils harden slowly and often only partially. Drying oils harden completely, often over a relative short time. Hardening takes place via cross-linking polymerization, after oxidation of the carbon to carbon double bonds found in the molecules (esters and free fatty acids) present in the oils.[53]

Also in oils there is the formation of dicarboxylic acids over time, via oxidative cleavage at the same double bond(s) and the subsequent formation of a second carboxylate group (–COOH) in the new smaller molecule. The most commonly formed such acid is Azelaic acid (A, 2C9:0); this is found in decreasing amounts going from drying to semi-drying to non-drying oils. The associated A/P ratios usually found are: for drying oils ≥ 1, semi-drying oils < 1 and non-drying oils $\ll 1$ (usually < 0.3). Also the $\sum$ % of dicarboxylic acids is found to be low for non-drying oils (< 15%) and higher for semi-drying (> 20%) and drying (> 40%) oils.[54, 55, 56] The A/P and $\sum$ % values for my two samples (MD16/55) are 0.19/0.29 and 10.4%/13.8% respectively. These values show that the oils in the two samples are non-drying ones.

All the species of Moringa oil have relatively large amounts of C20:0 (arachidic acid), C22:0 (B, behenic acid) and C24:0 (lignocerinic acid) present (either as free acids, or as a component of esters that can hydrolyse over time to give the acids). The P/B ratio has a range of values for the *Moringa oleifera* oil, which is given in the recent literature as 0.9 to 2.3. Also, the fatty acid profile (regarding percentage presences of the fatty acids) for this oil is P ≈ S ≈ B and where C22:0 > C20:0 > C24:0.[57, 58] The P/B value for both of my samples is 1.3, and they do have the above fatty acid profile (see Results section).

Thus, using all the historical, observational and chemical data available, it can be shown that my two samples were originally scented oils. The carrier oil used is strongly indicated to have been *Moringa oleifera* oil. Whilst I have no definitive current chemical evidence for the identity of the scents present, I feel other data (on samples from the two other drawers of the chest[59]) indicate that jasmine or orange extracts were probably used to scent these oils. Also, initial qualitative interpretation of the very recently collected GC-MS data shows no evidence for the presence of waxes or resins, only for the presence of a degraded fat or oil. Once fully processed and interpreted this data will be published later, hopefully combined with additional data (such as from GC-C-IRMS).

Past uses of moringa oil

Moringa oil has been known and used for millenia; its minimal odour, good absorbance of aroma molecules and its high resistance to becoming rancid made it an ideal carrier/base oil for scented oils/ointments/unguents.

It was imported into ancient Egypt of the Old Kingdom (from Syria and Cyprus) and later (perhaps from

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the New Kingdom period) grown in desert areas (such as around Thebes). It was used as a (hair) pomade, a skin emollient, a cooking oil, a cosmetic (scented oils/ointments) and as a an externally applied medicine – all on/for the living.[60]

Two well appreciated scented oils of Roman usage were *Susinum* and *Crocinum*. The former was made from oil of moringa, roses, cinnamon, saffron, myrrh and lilies, and was very popular as an 'aftershave balm'. The latter was mostly oil of ben and saffron, but because of the amount of saffron used it tended to stain when in contact with clothing.[61]

Much later, in an early seventeenth century English recipe book,[62] details are given of the somewhat lengthy process of scenting leather gloves. The carrier oil used in making the scented material, which was repeatedly applied to the gloves, was oil of ben or sweet almond oil (mixed with a little gum dragagant, also known as gum tragacanth and which is a gummy exudation from some species of *Astragalus*) and where the scents were extracts of rose, lemon or orange. Such gloves were popular with Elizabeth I, Charles I and even Oliver Cromwell, who had such gloves which he used when riding.[63]

A later seventeenth century perfume recipe book (translated from its original French)[64] gives details on the making of scented oils ('essence of flowers') using oil of ben and extracts of jasmine or orange-flowers.

Modern day uses of *Moringa oleifera* oil, seeds and leaves range from a potential food resource for humans and animals to a bio-diesel fuel to medical benefits for human health. Cosmetic use, to make long-lasting scented oils and ointments, is still being done albeit on a relatively small scale. It can also be used as a lubricant for fine machinery (for example: non-digital watches), and the seeds are currently used for water purification in developing countries as an alternative to western methods. Medicinal use is currently largely confined to folk medicine; such as using the raw or crushed seeds as a decoction for treating stomach pain, ulcers, poor vision, joint pain and for aiding digestion. Other medicinal properties have been suggested, but further pharmacological studies are needed to determine if they are valid.[65]

Only one example of a chemical analysis of an old ointment that (probably) contained moringa oil has been found in the English-language scientific literature. The sample was found in an Etruscan tomb in Chiusi (Tuscany, Italy) and dated to between 150/125 and 100 BCE. Chemical analysis found evidence for a vegetable oil (thought to be Moringa oil from the fatty acid profile) mixed with two plant resins (mastic and pine). The use of the ointment could have been cosmetic or medicinal, though as the sample's (alabaster) container was found in a cosmetic case (*scrinium*) then the former use is perhaps more likely.[66]

A recently discovered recipe for making scented oils from moringa oil and extracts of jasmine or orange flowers, from a book published in Venice in 1682 (originally published earlier in French), gives a recipe whose translation is:

> You will infuse the flowers in Ben oil, sweet almond oil, or the four cold seeds oil, dipped without fire in a glass vase, so that four of those flowers float on top of the oil. Cork your vase, and make [place?] the infusion in the sun or in a lukewarm bath, for three or four days, then you will filter and express [squeeze] your oil from the bulk of the flowers, replacing them with new flowers, in the same way, and will repeat [the process] several times until your oil is well scented which will be the third or fourth time you place it in the sun.[67]

There are two oils said to be of "the four cold seeds" (both obtained by cold pressing): oil from the four major cold seeds – cucumber, melon, pumpkin and watermelon; and oil from the four minor cold seeds – endive, lettuce, common purslane and chicory.

Conclusion

The two seventeenth century samples from the middle drawer of a "cassette per profumi" (box of perfumes/scents) have been shown to have originally been scented oils. Moringa oil (*oleifera* species is/was the most common, but the Egyptian *peregrina* species is also a possibility) was very probably the carrier oil, and the scents most likely extracts of jasmine or orange. Additional analytical chemistry data, hopefully to be published in the near future, should give extra information on the scents used and will likely make the identity of the oil a certainty.

The results obtained here highlight the potential uncertainty of using indications to identify a fat or oil, based on fatty acid ratios and their assigned ranges. They also show the advantages of combining historical, observational (of chest, containers and contents) and chemical data to give an exception to the usual indications. Additionally, a distinctive fatty acid profile greatly helped in determining which oil was present. The combination of data fits only one oil, Moringa oil. As far as I am aware no other vegetable oil, past or present, fits all my data.

Sometimes data, from sources historical or chemical, can give interpretations and generate facts that are preliminary and which will be later re-interpreted. Such facts can thus slip in and out of the shadows of history.

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It is to be hoped that some light has been shone on the characterisation of these samples. However, further studies may be needed to remove all the shadows.

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Author's address: Andrew Hardy BSc, DPhil, Centre for Medical History, College of Humanities, University of Exeter, Exeter, Devon EX4 4RJ, UK. E-mail: A.D.Hardy@exeter.ac.uk .

Endnotes and References

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31. The cabinet and its contents are on loan to the museum from a descendant of Oliver Cromwell's fourth son, Henry Cromwell. The cabinet has been variously described as a pomade, balsamari, "cassette per profumi" (box for perfumes/scents) chest. The white glass pots/tubs of the second/middle drawer have short narrow necks and were originally covered with semi-porous parchment paper and this with fabric (see Figure 3).

32. Unfortunately, though the Pharmacy agrees that it did make gifts for this Grand Duke, they have been unable to find evidence that they made *these* samples. The website address for this famous pharmacy in Florence is: www.italian.it/santamarianovella/smnuk.htm.

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SHORT COMMUNICATION

Henry Humphreys (1867-1943): a visionary in retail pharmacy in colonial Hong Kong

Patrick Chiu

Abstract

Henry Humphreys was born in Hong Kong and qualified as a pharmacist in Britain. He was groomed to become head of A. S. Watson, the leading chemist and druggist chain in China and the Philippines in the late nineteenth and early twentieth centuries. He was an entrepreneur, and grew the pharmacy business as a franchise to become a 100-outlet chain within 20 years. Watson's produced their own range of patent medicines, one of which "Anthelmintic Bonbons" became the patent medicine of choice among households throughout the far east, until its production ceased in 1987. This article traces Humphreys' life and career during the late nineteenth century until his retirement in 1933.

摘要（繁體中文）

屈臣氏大藥房是十九世紀末，二十世紀初在中國與菲律賓的一個領先連鎖藥房集團。亨利•堪富利士被培養成為屈臣氏集團的家族接班人。他是一位真正的企業家，在 20 年的時間裡，把藥房業務模式作為連鎖加盟，發展到上百家零售藥房。

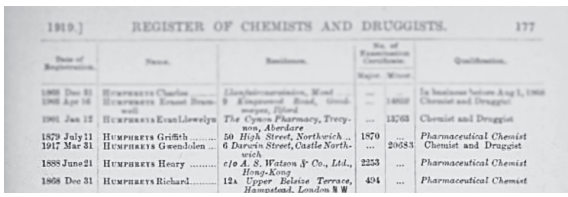
屈臣氏自 1870 年代推出含有《山道年》藥物成份的家庭驅蟲藥，曾經風行廣東、香港、上海、馬尼拉等地直至一百多年後的一九八七年在香港停產。

亨利•堪富利士在十九世紀末至 1933 年他退休時的現代中國和世界動盪時期間經营藥劑並面臨著許多挑戰。

Introduction

British colonial rule in Hong Kong began on 26 January1841 when the Union Jack was raised during the First Opium War. The cession was formally ratified on 29 August 1842 in the Treaty of Nanking, which ceded Hong Kong to Britain "in perpetuity". Fifty years later Hong Kong continued to serve not only the Chinese mainland but also the rest of the world as an entrepôt with which goods, people, and services could move freely across the territory. With a burgeoning population of 220,000 in 1891 – including 10,000 British expatriates and their family members – Hong Kong had transformed itself from a small speck in the South China Sea to a town with vibrant business activities.

A young man by the name of Henry Humphreys returned to Hong Kong in 1889 at the age of 22 after gaining the pharmaceutical chemist qualification from the Pharmaceutical Society of Great Britain. He joined



1919.] REGISTER OF CHEMISTS AND DRUGGISTS. 177

Date of Registration.	Name.	Residence.	No. of Examination Certificate. Major.	Minor.	Qualification.
1903 Dec 31	HUMPHREYS Charles	Llandrinarmedon, Mold	...	...	In business before Aug 1, 1908
1905 Apr 16	HUMPHREYS Ernest Brunswell	9 Kingswood Road, Gosforth, Northumberland	...	14659	Chemist and Druggist
1901 Jan 12	HUMPHREYS Evan Llewelyn	The Cymru Pharmacy, Treorchy, Aberdare	...	13763	Chemist and Druggist
1879 July 11	HUMPHREYS Griffith	50 High Street, Northwich	1870	...	Pharmaceutical Chemist
1917 Mar 31	HUMPHREYS Gwendolen	6 Darwin Street, Castle Northwich	...	20583	Chemist and Druggist
1888 June 21	HUMPHREYS Henry	c/o A. S. Watson & Co., Ltd., Hong-Kong	2253	...	Pharmaceutical Chemist
1868 Dec 31	HUMPHREYS Richard	12A Upper Belsize Terrace, Hampstead, London N W	494	...	Pharmaceutical Chemist

Figure 1. *Record of Henry Humphreys' registration as a pharmacist 1889 (Source: 1919 Register of Pharmaceutical Chemists, PSGB)*

his family business as the manager of A.S. Watson's, a chemists and druggists business (Figure 1). The shop had been taken over ten years earlier by his father, John David Humphreys.

Humphreys grew the A.S. Watson business to a multi-national pharmacy chain throughout China and the Philippines over a period of 56 years, with periodic ups and downs. During this time, the company employed many British qualified chemists and druggists to provide a similar quality of healthcare in the Far East as in Great Britain. However, in the midst of economic depression in 1933 – when Humphreys was 66 years of age – he decided to retire, and he departed Hong Kong for Vancouver Island, British Columbia.

Early childhood and acquisition of the A. S. Watson business

Henry Humphreys was the eldest son of John David Humphreys, and was born in Hong Kong in 1867 when his father moved from Australia to Hong Kong to become a bookkeeper for A.S. Watson. In the following year the then owner of A. S. Watson left, and John David Humphreys and Arthur Hunt took charge of the business as partners. Henry grew up when the A. S. Watson business began to take off after his father acquired Arthur Hunt's shares in the business in 1871, when Henry was 4 years of age. His father also established his own company, subsequently known as John D. Humphreys & Son Ltd.

Watson's dispensary business in Shanghai was managed by S. W. Cleave, and traded as the Hong Kong Dispensary at 16 Nanking (now Nanjing) Road near the Bund from 1860. After the acquisition Humphreys' father expanded Watson's manufacturing capacity by opening a new factory in 1875 in the Central District, Hong Kong Island to produce flavoured soda water and

https://doi.org/10.24355/dbbs.084-202007291249-0

other patent medicines. These included the most well-known over-the-counter medicine "Watson's Anthelmintic Bonbons" which were sold throughout China.[1] The Watson brand became a well-known household name from that time.

Watson's also began expanding beyond Hong Kong; its first overseas branch opened in Manila in the Philippines in 1883. Watson's then stepped up its presence in the Chinese mainland in more cities in addition to Canton and Shanghai. A. S. Watson & Co. Ltd. was eventually incorporated as a company in 1886.

With his childhood spent predominantly in a dispensary business owned by his family, Henry Humphreys was groomed to become a successor for the family business. Subsequently, he was sent to study at St. Helen's College in Southsea, England to prepare him for entry to the pharmaceutical profession. Humphreys passed the major examination in London, and obtained his Certificate of Registration as a Pharmaceutical Chemist in 1889.[2]

Humphreys' pharmacy career and commercial interests

In 1889 Humphreys returned to Hong Kong where he subsequently joined his father's business and became the pharmacist manager at Watson's. He was one of three pharmaceutical chemists at the time, the other two being William Edward Crow, who was the Government Apothecary cum Analyst, and Frank Browne, who was the Government Assistant Apothecary.

Humphreys published an article on 'Chinese Cinnamon' on the differentiation between Chinese cinnamon and cassia by visual and also chemical identification methods, in the October 1890 edition of the *American Journal of Pharmacy*. In his article he describes how:

> A cold aqueous infusion of all six samples yielded with iodine a bluish-black coloration, but with $HgCl_2$ [mercuric chloride] there was no yield of the presence of mucilage. The aroma of all six came near that of Ceylon cinnamon, but in some cases there was a pungency more consistent with the idea of their being derived from cassia. One important point, however, I have been able to ascertain is, that Chinese Cinnamon grows wild in Annam much further south than the West River in the Kwangsi and Kwangtung provinces, where cassia is cultivated. [1]

This was an apparent exercise to establish his position as a qualified pharmacist in the colony with knowledge of native Chinese herbs. A couple of years earlier, William Crow and others had similarly demonstrated their knowledge of Chinese herbs by publishing an article entitled 'Notes on Chinese materia medica' in *The China Review*.[2] The Watson business grew very quickly and had become an exemplar for modern pharmacy in Asia.

Figure 2. *Alexandra Building in Central and Watson & Co. Chemists, 1910's (Source: photograph supplied by A. S. Watson Group)*

The business premises of A. S. Watson at this time (Figure 2) were described as follows:

> The ground and first floors of that magnificent and imposing block known as Alexandra Buildings are occupied by the Hong Kong Dispensary, otherwise the well-known firm of A. S. Watson & Co. Ltd., Chemists, Druggists, Aerated Water manufacturers, etc. Travellers passing through Hong Kong should pay a visit to the Hong Kong Dispensary where they may obtain every requisite for their voyage, including toilet articles, medicines, perfumery, tobacco, cigars and wines of the very finest quality, at prices that will compare favourably with those ruling at home or at any place along the route. The retail shop is fit[ted] up in the most modern home style, and its stock is as complete as any of the largest contemporary establishment in London.[3]

Humphreys participated in the rapid expansion of the retail pharmacy business soon after he joined Watson in 1889. In the same year, the Watson trademark was registered for use with 78 products as applied to wines, spirits, liquors, medicines, perfumes, aerated water, and other articles supplied by dispensing chemists and druggists in accordance with the Trade Mark Ordinance 16 of 1873 and Ordinance 8 of 1886 in the colony. "Anthelmintic Bonbons" were one of six medicinal products among the 78 products registered with the Watson's trade mark (Figure 3).

By 1895, 35 dispensaries had been opened in China and 300 dispensary, toiletry and perfumery items were produced. Over 100 Watson's pharmacy outlets had been opened in China and the Philippines by 1900. By

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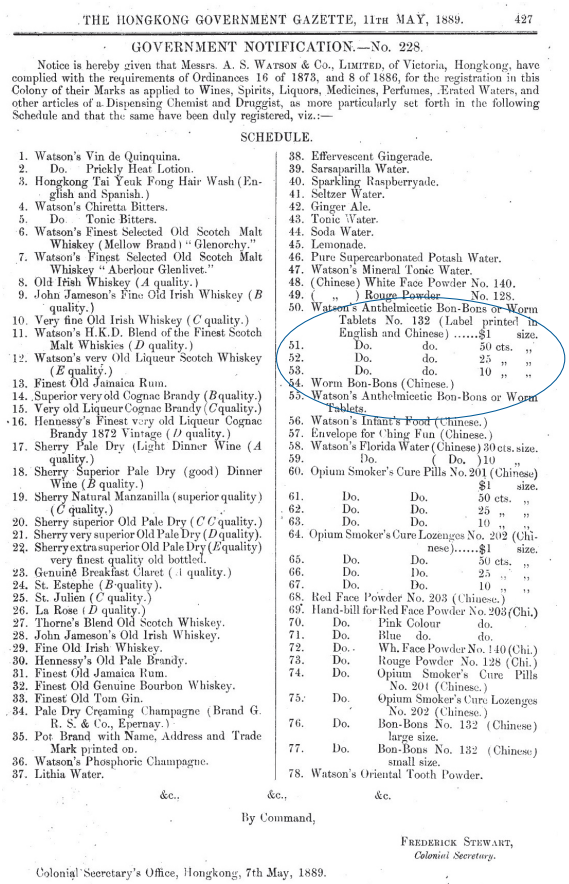

THE HONGKONG GOVERNMENT GAZETTE, 11TH MAY, 1889. 427

GOVERNMENT NOTIFICATION.—No. 228.

Notice is hereby given that Messrs. A. S. Watson & Co., Limited, of Victoria, Hongkong, have complied with the requirements of Ordinances 16 of 1873, and 8 of 1886, for the registration in this Colony of their Marks as applied to Wines, Spirits, Liquors, Medicines, Perfumes, Aerated Waters, and other articles of a Dispensing Chemist and Druggist, as more particularly set forth in the following Schedule and that the same have been duly registered, viz.:—

SCHEDULE.

1. Watson's Vin de Quinquina.
2. Do. Prickly Heat Lotion.
3. Hongkong Tai Yeuk Fong Hair Wash (English and Spanish.)
4. Watson's Chiretta Bitters.
5. Do. Tonic Bitters.
6. Watson's Finest Selected Old Scotch Malt Whiskey (Mellow Brand) "Glenorchy."
7. Watson's Finest Selected Old Scotch Malt Whiskey "Aberlour Glenlivet."
8. Old Irish Whiskey (*A* quality.)
9. John Jameson's Fine Old Irish Whiskey (*B* quality.)
10. Very fine Old Irish Whiskey (*C* quality.)
11. Watson's H.K.D. Blend of the Finest Scotch Malt Whiskies (*D* quality.)
12. Watson's very Old Liqueur Scotch Whiskey (*E* quality.)
13. Finest Old Jamaica Rum.
14. Superior very old Cognac Brandy (*B* quality.)
15. Very old Liqueur Cognac Brandy (*C* quality.)
16. Hennessy's Finest very old Liqueur Cognac Brandy 1872 Vintage (*D* quality.)
17. Sherry Pale Dry (Light Dinner Wine (*A* quality.)
18. Sherry Superior Pale Dry (good) Dinner Wine (*B* quality.)
19. Sherry Natural Manzanilla (superior quality) (*C* quality.)
20. Sherry superior Old Pale Dry (*C C* quality.)
21. Sherry very superior Old Pale Dry (*D* quality).
22. Sherry extra superior Old Pale Dry (*E* quality) very finest quality old bottled.
23. Genuine Breakfast Claret (*A* quality.)
24. St. Estephe (*B* quality).
25. St. Julien (*C* quality.)
26. La Rose (*D* quality.)
27. Thorne's Blend Old Scotch Whiskey.
28. John Jameson's Old Irish Whiskey.
29. Fine Old Irish Whiskey.
30. Hennessy's Old Pale Brandy.
31. Finest Old Jamaica Rum.
32. Finest Old Genuine Bourbon Whiskey.
33. Finest Old Tom Gin.
34. Pale Dry Creaming Champagne (Brand G. R. S. & Co., Epernay.)
35. Pot Brand with Name, Address and Trade Mark printed on.
36. Watson's Phosphoric Champagne.
37. Lithia Water.
38. Effervescent Gingerade.
39. Sarsaparilla Water.
40. Sparkling Raspberryade.
41. Seltzer Water.
42. Ginger Ale.
43. Tonic Water.
44. Soda Water.
45. Lemonade.
46. Pure Supercarbonated Potash Water.
47. Watson's Mineral Tonic Water.
48. (Chinese) White Face Powder No. 140.
49. (") Rouge Powder No. 128.
50. Watson's Anthelmicetic Bon-Bons or Worm Tablets No. 132 (Label printed in English and Chinese) .....$1 size.
51. Do. do. 50 cts. "
52. Do. do. 25 " "
53. Do. do. 10 " "
54. Worm Bon-Bons (Chinese.)
55. Watson's Anthelmicetic Bon-Bons or Worm Tablets.
56. Watson's Infant's Food (Chinese.)
57. Envelope for Ching Fun (Chinese.)
58. Watson's Florida Water (Chinese) 30 cts. size.
59. Do. (Do.)10 "
60. Opium Smoker's Cure Pills No. 201 (Chinese) $1 size.
61. Do. Do. 50 cts. "
62. Do. Do. 25 " "
63. Do. Do. 10 " "
64. Opium Smoker's Cure Lozenges No. 202 (Chinese).....$1 size.
65. Do. Do. 50 cts. "
66. Do. Do. 25 " "
67. Do. Do. 10 " "
68. Red Face Powder No. 203 (Chinese.)
69. Hand-bill for Red Face Powder No. 203 (Chi.)
70. Do. Pink Colour do.
71. Do. Blue do. do.
72. Do. Wh. Face Powder No. 140 (Chi.)
73. Do. Rouge Powder No. 128 (Chi.)
74. Do. Opium Smoker's Cure Pills No. 201 (Chinese.)
75. Do. Opium Smoker's Cure Lozenges No. 202 (Chinese.)
76. Do. Bon-Bons No. 132 (Chinese) large size.
77. Do. Bon-Bons No. 132 (Chinese) small size.
78. Watson's Oriental Tooth Powder.

&c., &c., &c.

By Command,

FREDERICK STEWART,
Colonial Secretary.

Colonial Secretary's Office, Hongkong, 7th May, 1889.

Figure 3. *Watson's Bonbons trademark registration, 1889 (Source: Hong Kong Government Public Records Office)*

then Watson had also become the sole distributor in the Far East for many well- known proprietary brands such as 'Scott's Fish Oil' in its served markets.

When turmoil in China arose from the nationalist revolutionary army toppling the Qing imperial government in 1911 Watson's scaled back its investment in the mainland as well as closing its operations in the Philippines. Humphreys therefore refocused his time and energy into building the Watson business in Hong Kong until the First World War erupted in Europe in 1914, during which the economy of Hong Kong as a trade and re-export also suffered.

Business started to grow again in the early 1920s and Humphreys took the initiative to expand the business in Taiwan by appointing a new distributor, "Deshoutang", which was an established herbal medicine shop in Taipei and traded as A. S. Watson to market 'Scott's Fish Oil' and a full range of Watson's lines for the retail pharmacy market in Taiwan.

Business took a downturn in the late 1920s when global depression, beginning in the United States during the period 1929-1932, dealt a severe blow to all businesses including Watson's. In addition, fighting had arisen in Shanghai when the Japanese army entered the International Settlement on 28 January 1932. During that period A.S. Watson's remained as the leading chemists and druggists in the colony (Table 1).[4, 5]

Table 1. *Watson's Pharmacists in Hong Kong*

Number of pharmacists registered in Hong Kong in year	**1908**	**1916**	**1927**	**1936**
Total number of pharmacists	13	19	24	27
Employed by A. S. Watson's	8	12	13	8
% employed by Watson's	62%	63%	54%	30%

Humphreys resigned at the end of the forty-eighth annual general meeting of Watson's held on 21 March 1933, and he was praised by the new chairman of the Board of Directors for his long association with the business he had helped to prosper over a period of 44 years, not only in Hong Kong but throughout the Far East.[6]

In addition to the pharmacy business with which he was directly involved Humphreys was also a member of the Board of Directors of John D. Humphreys & Son Ltd, the company that his father had created. He was also involved in the construction of the Peak Tramway in Hong Kong.

Humphreys was an active committee member of the Hong Kong General Chamber of Commerce, an expatriate business association during the colonial period in the nineteenth and first half of the twentieth centuries.

Humphreys' public service

Humphreys followed his father's footsteps to become an unofficial member of the Sanitary Board when he was elected uncontested for one of the two allocated seats in 1906. John David Humphreys had first held the seat as an appointed position in the Sanitary Board some twenty years earlier.

During his three years' tenure at the Sanitary Board Humphreys was appointed by Governor Matthew Nathan as one of the three-member Public Health and Regulations Ordinance Commission in 1906 to investigate alleged corruption and bribery in the Sanitary Department. The findings of the Commission led to the amendment of the Public Health and Building Ordinance in order to reform the Sanitary Board in 1908.[7]

During the First World War between 1914 and 1918 Humphreys joined the Volunteers Corps and was be-

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stowed with the honour of Justice of the Peace in 1922 in recognition of his contribution during the war.[8]

Humphreys' family

Humphreys was married to Alice (her maiden name is unknown) in Hong Kong the same year that he returned from the United Kingdom, in 1889. The couple had three children, namely John David, Violet Christine, and Dorothy, before Alice died in 1895. John David passed away at the age of 46 in Hong Kong in 1940.[9] Henry Humphreys remarried Eva Humphreys, reportedly a cousin, at St John's Cathedral in Central, Hong Kong Island on 12 April 1898. They had a son, Edmund Cecil, who migrated and settled in Bedford, England (Figure 4).[10]

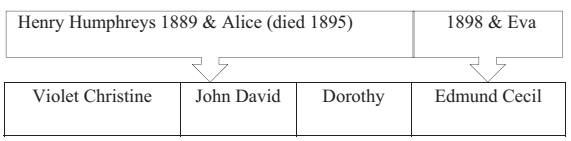

Figure 4. *Family Tree of Henry Humphreys*

Humphreys' hobbies and pastimes

Like many rich and famous people of his time in colonial Hong Kong Humphreys held membership in several gentlemen's clubs. This would allow him to meet and exchange gossip with his contemporaries. Humphreys was an avid tennis player, and he was also a member of the Royal Hong Kong Jockey Club. He was an active participant in the races at Happy Valley, and he owned several horses, like his father before him. He was also a member and frequent visitor to both the Cricket Club and the Yacht Club in Causeway Bay.

After retirement

Henry planned for his retirement in 1918 at the age of 51 when he went to Vancouver Island, British Columbia, Canada for a vacation. In her book on Victorian houses, Valerie Green describes Grave Hall, Humphreys' retirement home in Vancouver Island:

> In 1918 they came to the Cowichan Valley and purchased the bungalow from Hirsch to use primarily as a summer cottage. Humphreys soon developed it into a grand, 22-room home with an Oriental flavor. He also added a 21 by 30 foot billiard room and, being an avid gardener, he transformed the grounds into a spectacular oasis. Twelve Chinese gardeners were brought to Canada by Humphreys to work in the estate, and they lived in the bunkhouse behind the greenhouse. The Humphreys called their home "Thorpe" and spend many happy years developing it into one of the most attractive properties in the area, and he was a member of the Cowichan Country Club for many years. In 1939, the Humphreys sold their property and moved to Victoria, where they took up residence at the Empress Hotel. Humphreys became a member of the nearby Union Club. [11]

Conclusion

Henry Humphreys was born to an entrepreneurial family in Hong Kong in 1867, trained as a pharmaceutical chemist in London and used his knowledge to the fullest extent by growing the A. S. Watson chemist and druggist business in the late nineteenth century until his retirement in 1933. His journey was especially challenging given the turbulent times of the late Qing dynasty, the transition to the Republican era, the First World War, and the Global Depression, amongst other monumental events.

As an educated and successful businessman in Hong Kong he lived the life of the British colonial elite, with active participation in the local businesses and social circles through his membership of the prestigious and exclusive gentlemen's clubs such as the Royal Hong Kong Jockey Club. Humphreys was also a family man with four children; and he remained an avid tennis player even after retirement when he moved to Vancouver, British Columbia in Canada.

Humphreys passed away at the age of 76 in 1943 in Vancouver, Canada leaving a legacy in retail pharmacy that is still being felt today. Humphrey's vision of growing A. S. Watson's as a global health and beauty cum pharmacy chain had finally been realized in 2016, with 13,000 stores in 25 different markets. The company's national brands eventually included 'Drogas' in the Baltic states, 'Kruidvat' in the Benelux countries, 'Roosman' in central Europe, 'Savers' and 'SuperDrug' in the United Kingdom, 'Spektr' in Russia, and 'Trekpleister' in the Netherlands, amongst others.

On the 175th anniversary in 2016 of its inception in 1841, with the 2016 financial report stating revenues of HKD 152 billion (£15billion or €17.9billion) there continue to be ambitious plans to expand Humphrey's vision by opening over 1,000 stores annually.[12] This pharmacist was therefore a truly remarkable and global entrepreneur of his time in the late nineteenth and early twentieth centuries.

Author's address: Patrick Chiu, Hong Kong Society for the History of Pharmacy, 1104 Crawford House, 70 Queens Road, Central, Hong Kong. E-mail: pchiuy@netvigator.com

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Endnotes and References

1. Santonin, an active roundworm purgative derived from the plant *Artemesia cina,* was cultivated in Central Asia. It was a popular anthelmintic used in the nineteenth century and the first half of the twentieth century in Europe and North America, until it was replaced by piperazine in the 1950s. Santonin was listed in the earlier editions of the *British Pharmacopoeia*, the *United States Pharmacopoeia* and several others.

2. *Chemists and Druggists Register*, Pharmaceutical Society of Great Britain, 1919: 177. https://archive.org/details/registersofpharm00pharuoft. Accessed 5 May 2017.

3. Humphreys, H. Chinese Cinnamon. In Maisch, JM. (ed.) *The American Journal of Pharmacy*, Philadelphia College of Pharmacy; October 1890: 497-500.

4. Chiu, P. The first hundred years of western pharmacy in colonial Hong Kong, 1841-1940. *Pharmaceutical Historian.* 2016; 46(3): 42-49.

5. Lee, P. From trade to industrial take-off. In Faure, D. and Lee, P. (eds). *A Documentary History of Hong Kong – Economy.* Hong Kong: Hong Kong University Press, 2004: 57.

6. *Hong Kong Government Gazette*. 1908: 842. 1916: 529. 1927: 771. 1936: 995. 1940: 20. http://sunzi.lib.hku.hk/hkgro/browse.jsp. Accessed 5 May 2017.

7. In 1940 a total of 36 pharmacists were registered under the Pharmacy and Poisons Ordinance 1937, of whom 21 worked in the retail pharmacy sector. A. S. Watson employed 6 or 29% of retail chemists; the rest worked in single owner pharmacy or trading companies and 5 with the government.

8. Messrs A. S. Watson & Co. Ltd. *Hong Kong Daily News.* 22 March 1933: 6.

9. Pollock, HE. Report of public health and buildings commission. *Sessional Papers.* 1907; 10 (185):1-296. http://sunzi.lib.hku.hk/hkgro/view/s1907/1993.pdf. Accessed 5 May 2017.

10. *Hong Kong Government Gazette.* 1922: 242. http://sunzi.lib.hku.hk/hkgro/view/g1922/77110.pdf. Accessed 5 May 2017.

11. *Carl Smith Collection.* Hong Kong Public Records Office: 111325. http://www.grs.gov.hk/ws/english/ps_online_cata_csc.htm#. Accessed 5 May 2017.

12. *Carl Smith Collection* (Note 11): 111323, 111321. http://www.grs.gov.hk/ws/english/ps_online_cata_csc.htm#. Accessed 5 May 2017.

13. Green, V. *If More Walls Could Talk: Victoria's Houses from the Past.* Victoria: Touch Wood Editions, 2001: 70.

14. Zheng, S. A. S. Watson: From single dispensary in 1841 to global health and beauty chain. *South China Morning Post.* 5 December, 2016. http://www.scmp.com/business/article/2049009/aswatsonsingle-dispensary-1841-global-health-and-beauty-chain. Accessed 5 May 2017.

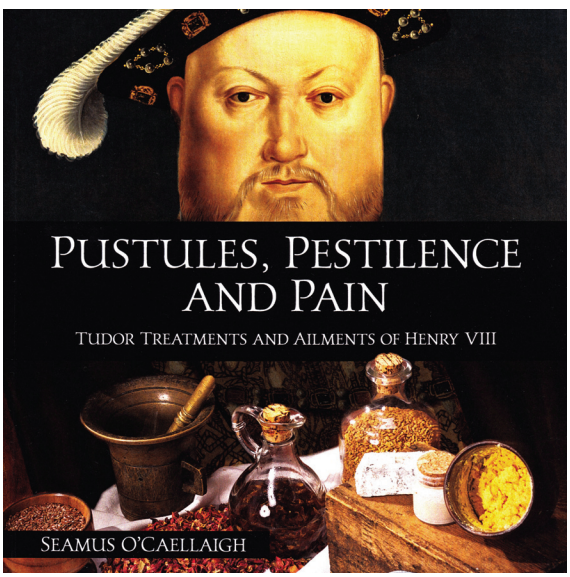
https://doi.org/10.24355/dbbs.084-202007291249-0

BOOK REVIEW

Pustules, Pestilence and Pain. Tudor Treatments and Ailments of Henry VIII

By Seamus O'Caellaigh

Almería, Spain: MadeGlobal Publishing, 2017. Pp 132. Paperback, price £14.99. ISBN-10: 8494729845.



Reviewed by Christopher J. Duffin

Publications concerning Tudor medicine are relatively few and far between, so the appearance of a new title dedicated to this particular time period in the history of medicine is worth a considered examination. The focus of this particular volume is King Henry VIII (1491-1547), the illnesses, complaints and accidents from which he suffered, and the contemporary remedies and treatments which might have been used to try to ameliorate his various conditions. Dedicating a volume to the ailments of a single monarch is unique, so far as I am aware, although treatments for royalty have been considered in *The Royal Apothecaries* by Leslie Matthews (1967), *The Death of Kings* by Clifford Brewer (2000), *Royal Poxes and Potions* by Raymond Lamont-Brown (2001) and *The Royal Doctors, 1485-1714: Medical Personnel at the Tudor and Stuart Courts* by Elizabeth Lane Furdell (2001). The publisher of this volume, MadeGlobal Publishing, is a relatively new company, having been established only in 2012.

Henry VIII is an interesting character to have chosen as a subject. He is, of course, well known from history lessons at school as the king who married six wives, who precipitated the English Reformation as a consequence of his clash with the Pope over the question of his (Henry's) attempted annulment of his marriage to Catherine of Aragon (his first wife) and the resulting changes to the English Constitution. The Church of England, with Henry himself appointed as its supreme head, separated from papal authority and Henry filled his coffers with the income and proceeds from the assets resulting from his Dissolution of the Monasteries.

These, and numerous other political machinations, ensured his place in history as an egotistical but charismatic monarch, author and composer, who changed the face of England in numerous ways, and guaranteed his being the subject of many later plays, films, biographies and novels. Portraits depicting him in later life reveal his obesity – his waist measured 54 inches (140cm) and he relied upon various mechanical aids (including the 'king's trams' – effectively a type of sedan chair – for carrying him about the palace, and possibly also special hoists) to facilitate his mobility.

Henry VIII suffered from numerous ailments at various times over his 55 years, some of which are well attested and others the source of speculation based upon the suite of symptoms which he exhibited at various times during his life. He was troubled by gout, for example, and also suffered occasional bouts of constipation. There has been much discussion of a suggestion, originally posited in the 1920s, that he suffered from syphilis; it is now generally agreed that was not the case.

Henry's progressive obesity and accompanying changes, such as developing a moon-shaped face, plus his mental decline in later years, have brought about speculation that he may have suffered from the endocrine abnormality Cushing's Syndrome, to have been the consequence of Traumatic Brain Injury (TBI) sustained during a jousting accident on 24 January 1546, or to be indicative of McLeod Syndrome (an X-linked recessive genetic disorder leading in turn to being Kell positive) for example. It has also been suggested that scurvy was a contributing factor in his death.

O'Caellaigh does not engage with these areas of discussion but selectively considers the somewhat safer ground of Henry's experience with smallpox (1514), malaria (tertian fever; 1521), his ulcerated legs and varicose fistula (1527 onwards), constipation (1539), and a series of accidents (two jousting accidents, in 1524 and again in 1536, and a mishap whilst playing tennis in 1527). Following introductory remarks concerning the primary sources consulted, and contemporary theories of medicine, diagnosis and prescription, the author proceeds to address his chosen suite of ailments. Each condition is considered in relation to the circumstances of Henry VIII's life and times, often presenting interesting contemporary quotations from letters and other sourc-

https://doi.org/10.24355/dbbs.084-202007291249-0

es, and relevant background and contextualising information.

Henry was actively interested in medical treatments; something of a hypochondriac, he was intensely inquisitive and applied his knowledge of the therapeutic properties of a wide range of medicinal plants to the practical development of around 100 receipts (or recipes) for various balms, ointments and poultices. He also retained the services of numerous medical personnel, including, at various times, famous names such as Thomas Linacre (1460-1524), Andrew Boorde (c.1490-1549), John Chambre (1470-1549), Augustine de Augustinis (dates unknown), William Butts (c.1485-1545) and Sir John Ayliffe (dates unknown).

In the absence of detailed records of actual treatments for Henry, the author consults two main contemporary Tudor medical texts: Bullein's *Bulwarcke of Defence* (1579) and Thomas Gale's *Certaine works of chirurgerie* (1563). William Bullein (c.1515-1576) is believed to have been a relative of Anne Boleyn, Henry's second wife, and attended Henry as a 'nurse-surgeon'. Thomas Gale (1507-1586) was not consulted by Henry so far as I am aware. O'Caellaigh chooses receipts appropriate to the various symptoms and conditions suffered by Henry during the progress of his various ailments, as chosen by the author. The recipes are presented in both their original spelling and syntax, and then as more modern transcriptions for ease of reference. The components of the poly-pharmaceutical preparations are then considered in relation to contemporary understanding, and also in relation to a modern appreciation of the active ingredients in the most significant of the herbal and other materials used, as well as some consideration of their potential contra-indications or demerits. Tudor medical terms and archaisms are suitably explained and useful background information, explanation and wider contextual data are used in discussing the recipes and their ingredients. The text is supplemented by numerous informative endnotes and a bibliography.

This book provides an interesting insight into the prescribing practices of Tudor Britain. Intelligently written and presented, and supported by good quality photographic illustrations, this volume provides a useful, well researched stepping off point for further pursuit of the topic.

Reviewer's Addresses: Dr Christopher J. Duffin, Scientific Associate, Department of Earth Science, Palaeontology Section, The Natural History Museum, Cromwell Road, London SW7 5BD, UK, and 146 Church Hill Road, Sutton, Surrey, SM3 8NF, England.
Email: cduffin@blueyonder.co.uk.

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Leslie Matthews' Drug Jar

Figure 1. *Drug jar depicted in the Ex Libris of Leslie G. Matthews (Source: Royal Pharmaceutical Society Museum, London, UK, Ref. 1997-50-4a)*

Subsequent to our article on Leslie G. Matthews (1897-1997)[1] we became aware of further details. Staff at the Museum of the Royal Pharmaceutical Society in London informed us that the drug jar depicted in Matthews' Ex Libris (Figure 1) is now part of the museum's collection.[2] The jar came into the possession of the museum after Matthews' death in 1997.[3] It is 245mm high, 195 mm wide and 165 mm deep. The database of the museum includes the following description:

> Italian maiolica wet drug jar, dated 1605, of baluster form with strap handle, the spout with entwined support, painted in blue and manganese. The jar is labelled SY.DI.POMIS (syrupus de pomis compositus regis saporis), which was a purgative syrup prepared from apple juice, senna leaves and borage. The syrup was supposedly named after Sabor ibn Sahl, the 9th century Persian physician and compiler of the Krabadin, the first known official pharmacopoeia. The jar's label is surmounted by an YHS monogram and a cross, which was the mark of the Company of Jesuits. The jar is therefore likely to be from a monastic, possibly hospital dispensary of a Jesuit Order. The date on the jar is 1605.

We gratefully acknowledge this addendum and thank the museum's staff for their assistance.

Christiane Staiger, PhD, Neu-Isenburg, Germany. Email: ch.staiger@gmx.de
Peter G. Homan, Epsom, Surrey, UK. Email: p.g.homan2@btinternet.com

Endnotes and References

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